

IDS-11605/14
12203sh

I claim:

12203sh = 12203sh

1. A knockdown hand rail system comprising:

2 at least two spaced apart vertical posts;

4 at least two spaced apart horizontal rails removably engaged with the vertical posts;

6 removable and replaceable polymerized sheathing surrounding each of the vertical posts, the sheathing having an interior diameter equal to or greater than the outer diameter of the vertical posts and extending the height of the posts;

8 removable and replaceable polymerized sheathing surrounding each of the horizontal rails, the sheathing having an interior diameter equal to or greater than the outer diameter of the horizontal rails and extending the length of said horizontal rails; and

10 slip-on structural fittings removably interconnecting the horizontal rails with the vertical posts, each fitting having a securing mechanism engaging the rails or the posts

12 without penetrating the polymerized sheathing.

a

2. The hand rail system as defined in claim 1, wherein at least one of the fittings

2 comprises a T-shaped member having a hollow interior, each leg of the T-shaped member

4 having an interior profile identical to the exterior profile of the horizontal rails and the

6 vertical posts, the interior profile having a diameter equal to or greater than the exterior diameter of the polymerized sheathing surrounding each of the horizontal rails and the

vertical posts.

3. The hand rail system as defined in claim 1, wherein at least one of the fittings
2 comprises an L-shaped member having a hollow interior, each leg of the L-shaped member
having an interior profile identical to the exterior profile of the horizontal rails and the
4 vertical posts, the interior profile having a diameter equal to or greater than the exterior
diameter of the polymerized sheathing surrounding each of the horizontal rails and the
6 vertical posts.

sub A7 4. The hand rail system as defined in claim 1, further comprising:
2 a third vertical post, the horizontal rails being removably engaged with the third
vertical post; and
4 removable and replaceable polymerized sheathing surrounding the third vertical post,
the sheathing having an interior diameter equal to or greater than the outer diameter of the
6 vertical post and extending the height of the post.

sub A7 5. The hand rail system as defined in claim 1, wherein the spaced-apart vertical
2 posts and the spaced-apart horizontal rails define a framed area, the system further including
an infill panel having an area which substantially consumes the framed area, the panel being
4 mounted in the framed area.

sub A7 6. The hand rail system as defined in claim 5, further comprising one or more

2 sections of U-channel affixed to each of the vertical posts and the horizontal rails for mounting the infill panel.

Sub A11 7. The hand rail system as defined in claim 5, wherein the infill panel is a mesh screen.

Sub A12 8. The hand rail system as defined in claim 5, wherein the infill panel is a solid panel.

9. A hand rail assembly comprising:
2 a perimeter frame composed of steel tubing covered with plastic sheathing, the perimeter frame surrounding a framed area;
4 an infill panel disposed in the framed area such that the panel is surrounded by the perimeter frame.

10. A hand rail assembly comprising:
2 a pair of spaced apart vertical posts each having a lower end and an upper end, the lower ends being configured to engage a support surface;
4 an upper rail extending between the upper ends of the vertical posts;
a lower rail extending between the vertical posts and positioned below the upper rail;

6 plastic sheathing surrounding each of the vertical posts and the upper and lower rails;
the vertical posts and the rails together defining a perimeter frame having a framed
8 area defined therein, the framed area having a top edge defined by the upper rail, a lower
edge defined by the lower rail, and sides defined by the vertical members; and
10 an infill panel supported in the framed area.

11. The hand rail assembly according to claim 10, further comprising structural
2 fittings interconnecting the rails with the posts, at least one of the structural fittings
comprising a slip-in fitting having a base with a radiused end surface matching the outer
4 diameter of the plastic sheathing on one of the posts or rails, the fitting further having an
engagement member extending from the base, the engagement member configured to engage
6 the inner diameter of one of the posts or rails.

12. The hand rail assembly according to claim 11, wherein the structural fitting
2 further comprises a connector operable to connect the fitting to one of the posts or rails such
that the end surface mates with the outer diameter of the post or rail.

13. The hand rail assembly according to claim 11, wherein the base of the
2 structural fitting has an outer diameter substantially the same as the outer diameter of the
plastic sheathing on the rails.

14. The hand rail system according to claim 11, wherein the engagement member
2 comprises a pair of engagement fingers shaped to fit into the inner diameter of the post or
rail.

Sub a15 15. The hand rail assembly according to claim 10, further comprising structural
2 fittings interconnecting the rails with the posts, at least one of the structural fittings
comprising a slip-on fitting having an inner diameter greater than or equal to the outer
4 diameter of the plastic sheathing on the posts or rails.

Sub a14 16. The hand rail assembly according to claim 15, wherein the structural fitting
2 further comprises a set screw operable to press against the plastic sheathing such that the
fitting grips the sheathing and the post or rail without penetrating the sheathing.

17. A hand rail assembly with an infill panel, comprising:
2 a pair of spaced apart vertical posts each having a lower end and an upper end, the
lower ends being configured to engage a support surface, each of the posts having a height
4 and an outside diameter;
replaceable polymerized sheathing surrounding each of the posts, the sheathing
6 having an inner diameter equal to or greater than the outside diameter of the posts, the
sheathing extending substantially the entire height of the posts;

8 an upper rail extending between the upper ends of the vertical posts and releasably
engaged to the upper ends of the vertical posts, the upper rail having a length and an outside
10 diameter;

12 a lower rail extending between the vertical posts and positioned below the upper rail,
the lower rail releasably engaged to the vertical posts and having a length and an outside
14 diameter;

16 replaceable polymerized sheathing surrounding each of the rails, the sheathing having
an inner diameter equal to or greater than the outside diameter of the rails, the sheathing
18 extending substantially the entire length of the rails;

20 the vertical posts and the rails together defining a perimeter frame having a framed
area defined therein, the framed area having a top edge defined by the upper rail, a lower
edge defined by the lower rail, and sides defined by the vertical posts; and

22 an infill panel supported in the framed area.

18. The hand rail assembly according to claim 17, further comprising structural
2 fittings interconnecting the rails with the posts, at least one of the structural fittings
comprising a slip-in fitting having a base with a radiused end surface matching the outer
4 diameter of the plastic sheathing on one of the posts or rails, the fitting further having an
engagement member extending from the base, the engagement member configured to engage
6 the inner diameter of one of the posts or rails.

19. The hand rail assembly according to claim 18, wherein the structural fitting
2 further comprises a connector operable to connect the fitting to a post or rail such that the end
surface mates with the outer diameter of the post or rail.

20. The hand rail assembly according to claim 18, wherein the base of the
2 structural fitting has an outer diameter substantially the same as the outer diameter of the
plastic sheathing on the rails.

21. The hand rail system according to claim 18, wherein the engagement member
2 comprises a pair of engagement fingers shaped to fit into the inner diameter of the post or
rail.

22. A hand rail assembly comprising:
2 a pair of spaced apart vertical posts each having a lower end and an upper end, the
lower ends being configured to engage a support surface;
4 an upper rail extending between the upper ends of the vertical posts;
a lower rail extending between the vertical posts and positioned below the upper rail;
6 plastic sheathing surrounding each of the vertical posts and the upper and lower rails;
structural fittings interconnecting each of the rails with the posts, each structural
8 fitting comprising a base having a radiused end surface matching the outer diameter of the

plastic sheathing on one of the vertical posts, the base being connected to the post such that
10 the end surface mates with the outer diameter of the plastic sheathing, the fitting further
comprising an engagement member extending from the base and engaging the inner diameter
12 of one of the rails.

23. The hand rail assembly according to claim 22, wherein the base of the
2 structural fitting has an outer diameter substantially the same as the outer diameter of the
plastic sheathing on the rails.

24. The hand rail system according to claim 22, wherein the engagement member
2 comprises a pair of engagement fingers shaped to fit into the inner diameter of the post or
rail.

add 4,5 >